CASE 1-20161/A/CONT/CPA 4

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

IN RE APPLICATION OF
BERNHARD MÜLLER
APPLICATION NO: 08/801,327
FILED: FEBRUARY 18, 1997
FOR: FIBRE-REACTIVE ANTHRAQUINONE DYES, PROCESS FOR THEIR PREPARATION AND THE USE THEREOF

Group Art Unit: 1751
Examiner: M. Einsmann

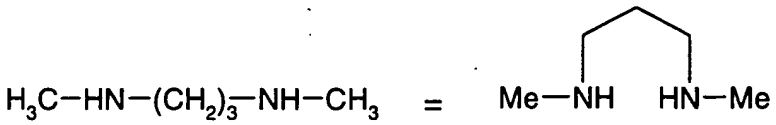
Assistant Commissioner for Patents
Washington, D.C. 20231

REPLY BRIEF

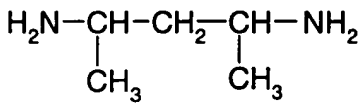
Sir:

The following remarks are in response to the new point of argument made by the Examiner on page 5, last line to page 6, line 5 of the Examiner's Answer. The examiner asserts on page 6 that 1,3-dimethyl-1,3-diaminopropane is described with properties in the attached article by Buxtorf et al. (Helvetica Chimica Acta, Vol. 57, Fasc. 4 (1974) 1035-1036). The statement is correct, but totally irrelevant to the arguments advanced by appellant. In no way does the article by Buxtorf et al. establish that the critical intermediate needed to prepare the dyes of examples 48 and 74 of Harms et al., 2,4-diaminopentane, was known. Hence the conclusion, "Thus the specific dyes [of examples 48 and 74] of Harms et al. are enabled" is **clearly erroneous**.

The diamine described on page 1036 of the Buxtorf reference (experimental part, third paragraph) and designated therein as "*1,3-Dimethyl-1,3-diaminopropane (III)*" is the compound of the formula



and not 2,4-diaminopentane which corresponds to the formula

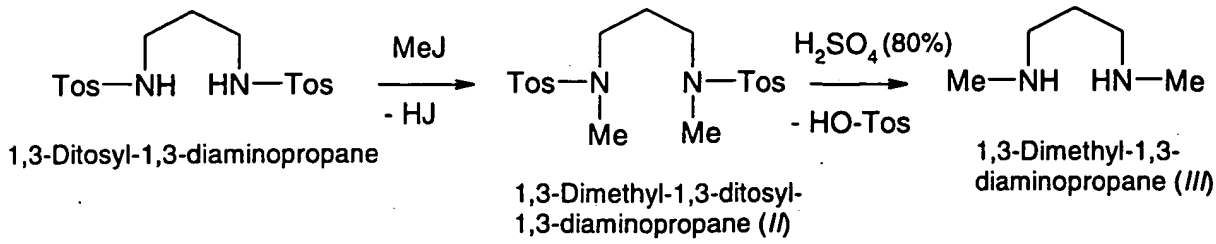


The designation "*1,3-Dimethyl-1,3-diaminopropane*" given for compound (III) of Buxtorf et al. is possibly misleading.

The teachings of Buxtorf et al. are directed to three macrocyclic N-methyl-substituted tetramines designated therein as N-methyl-substituted 1,4,8,11-tetraazacyclotetradecanes and abbreviated *1-MeCyclam-14, 2-MeCyclam-14 and 4-MeCyclam-14.* The synthesis, properties and complexation of these macrocyclic compounds are described therein. See in particular the summary on page 1035 and the formula on page 1036 as well as the illustrative text below said formula.

The object underlying the study disclosed was to investigate the effect of N-methyl substitution on the complexation rate of such macrocyclic amines (first three lines of the last paragraph on page 1035). Accordingly, said N-methyl-substituted macrocycles were synthesized (page 1036, lines 3 and 4). In the experimental part on page 1036 details are given on how the multistep synthesis is carried out. With regard to said multistep synthesis, the following schemes 1 and 2 should help to demonstrate that the compound designated "*1,3-Dimethyl-1,3-diaminopropane (III)*" which is applied as one of the starting materials is, in fact, not 2,4-diaminopentane.

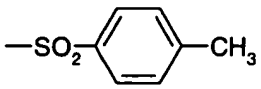
Scheme 1 gives an outline of the synthesis described in the second and third paragraph of the experimental part of Buxtorf et al. (page 1036):



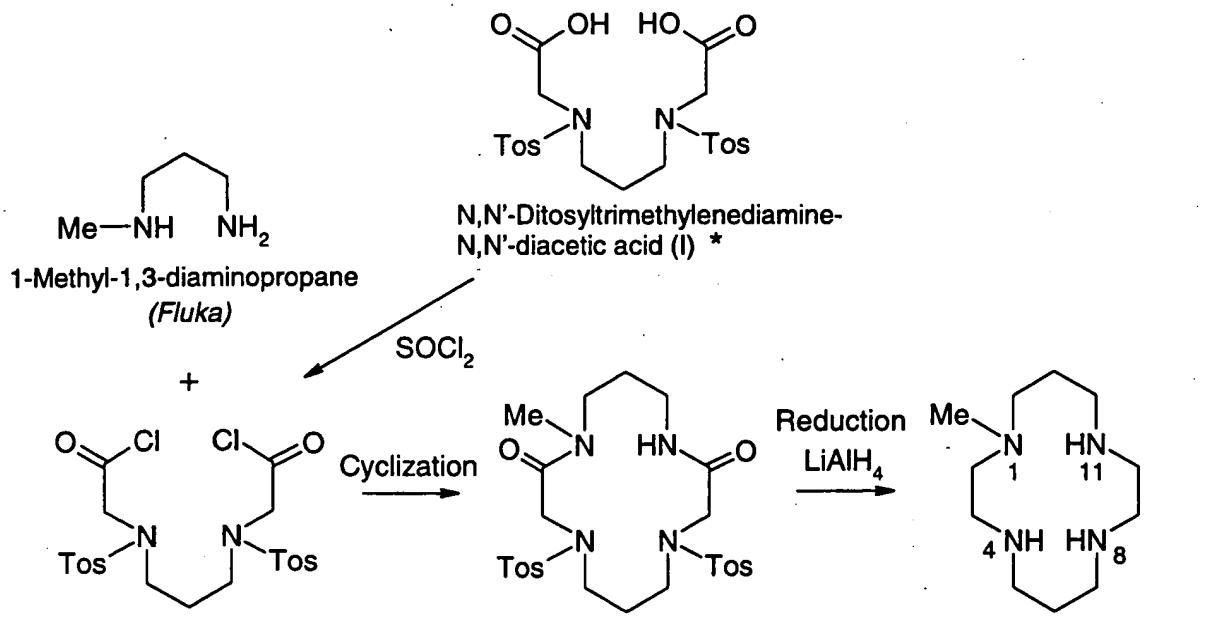
1,3-Ditosyl-1,3-diaminopropane

1,3-Dimethyl-1,3-ditosyl-1,3-diaminopropane (*II*)

1,3-Dimethyl-1,3-diaminopropane (*III*)

Tos =  (Tosyl radical); Me = $-CH_3$; J = iodide.

Scheme 2 gives an outline of the synthesis described in the first and 4th to 7th paragraphs of the experimental part of Buxtorf et al. (page 1036):



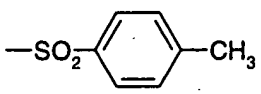
1-Methyl-1,3-diaminopropane *(Fluka)*

N,N'-Ditosyltrimethylenediamine-N,N'-diacetic acid (I) *

N,N'-Ditosyltrimethylene-diamine-diacetylchloride

1-Methyl-4,8-ditosyl-1,4,8,11-tetraaza-2,10-dioxo-cyclotetradecane (IV)

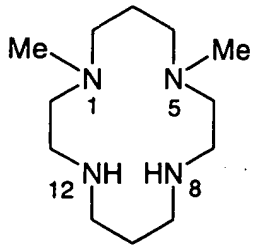
1-Methyl-1,4,8,11-tetraaza cyclotetradecane (1-MeCyclam-14)

Tos =  (Tosyl radical); Me = $-CH_3$; J = iodide.

* designation corrected

1,3-Dimethyl-1,3-diaminopropane (*III*) obtained according to the second and third paragraphs of the experimental part of Buxtorf et al. (scheme 1) can be applied instead of *1-methyl-1,3-diaminopropane*

purchased from Fluka in the cyclization and subsequent reduction procedure according to the 4th to 7th paragraphs of the experimental part of the reference (scheme 2). Accordingly, *1,5-dimethyl-1,5,8,12-tetraazacyclo-tetradecane* (*2-MeCyclam-14*) is obtained, the formula of which is given below. Said formula corresponds to the formula on page 1036 of Buxtorf et al, wherein $R^1 = R^2 = CH_3$, $R^3 = H$).



1,5-Dimethyl-1,5,8,12-tetraaza cyclotetradecane

(2-MeCyclam-14)

In summary, a proper analysis of the Buxtorf et al. article clearly shows that said reference fails to disclose 2,4-diaminopentane and its physical properties as asserted by the examiner. Appellant's position that 2,4-diaminopentane is not commercially available and cannot be made by procedures known in the art of amine preparation thus stands unrebutted. It is therefore again averred that one skilled in the art was not enabled to make and use the invention disclosed in Examples 48 and 74 in the Harms reference at the time the instant invention was made.

In light of the above remarks and those in the Appeal Brief, appellant avers that the rejection of claims 2, 3, 5-10 and 16-19 under 35 U.S.C. § 103(a) as being unpatentable over Harms, GB 2,034,731 is in error as to fact and law and should therefore be REVERSED.

Respectfully submitted,

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